

IN THE DRAWINGS:

Please substitute the two attached replacement drawing sheets for the corresponding original drawing sheets. The new drawing sheets include changes to Figures 1 and 3.

In Figure 1, the reference numbers "100" and "140" have been added.

In Figure 3, the reference number "340" has been added.

Attachments:

2 replacement sheets

2 annotated sheets showing changes

REMARKS

The Applicant appreciates the time taken by the Examiner to review the Applicant's present application. This application has been carefully reviewed in light of the Examiner's comments, including the Office Action mailed September 10, 2007. The Applicant respectfully requests reconsideration and favorable action in this case.

Summary of rejections and amendments

The Examiner previously rejected claims 1, 11, 13, 14 and 24 under 35 U.S.C. 112, second paragraph, claims 1-24 under 35 U.S.C. 102(e). The Applicant has amended claims 1, 11, 13, 14 and 24. Claims 1-24 are therefore pending in the application.

Objections to drawings

The Examiner objects to the drawings because reference numbers 100 and 140 are not shown in Figure 1, and reference number 340 is not shown in Figure 3. The Applicant has amended the drawings to incorporate these reference numbers and therefore believes the Examiner's objections to the drawings have been overcome.

Rejections under 35 U.S.C. §112

Claims 1, 11, 13, 14 and 24 are rejected under 35 U.S.C. §112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter regarded as the invention. The Examiner states that the language "response to the filtered signals" is confusing. The Applicant has amended these claims to use the language "response based on the filtered signals" as suggested by the Examiner. The Applicant believes the amendment of the claims to use this language overcomes the Examiner's rejection under 35 U.S.C. §112.

Rejections under 35 U.S.C. §102

Claims 1-24 are rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,498,531 ("Ulrick"). The Applicant respectfully traverses this rejection.

In order to anticipate a claim, the reference must teach every element of the claim. The elements must be arranged as required by the claim, and must be shown in as complete detail as is contained in the claim. M.P.E.P. 2131. The Applicant respectfully submits that the Ulrick

reference fails to disclose the elements of the claims, as arranged in the claims, and in as much detail as is contained in the claims. Ulrick therefore fails to anticipate the claims.

Regarding claim 1, the Examiner states that Ulrick discloses all the limitations of the claimed system. The applicant, however, respectfully disagrees. For example, the Examiner states that Ulrick discloses sensors coupled to the amplifier output stage, citing "temperature, figure 3". The applicant points out that the only reference to temperature in figure 3 is a signal ("OVER TEMP SIGNAL") depicted at the lower, right-hand corner of the figure which is input to an AND gate. There is no indication in the figure that the source of this signal is a sensor coupled to the output stage of the amplifier. The text describing figure 3 discloses only that this signal indicates when "the heat sink temperature gets too hot" (col. 8, lines 55-59.) Because the OVER TEMP signal is discussed with the signal indicating an over-voltage condition in the power supply, it appears that the OVER TEMP signal relates to the power supply as well. To say that the OVER TEMP signal is generated by a sensor coupled to the amplifier output stage would be mere speculation. Thus, Ulrick fails to disclose that there are sensors coupled to the output stage as recited in claim 1, and as required by M.P.E.P. 2131.

The Examiner further states that Ulrick discloses the limitation of the controller being configured to provide a programmable response to the filtered sensor signals, citing "amplifier control". Again, the applicant disagrees. Ulrick very clearly states that the system of Ulrick does not provide a programmable response to the temperature signal (OVER TEMP) cited by the Examiner, but simply turns the amplifier off (col. 8, lines 55-59.) The amplifier control disclosed by Ulrick therefore does not meet the recited limitation of providing a programmable response to the OVER TEMP signal, and the applicant finds no indication in the reference that a programmable response is provided based on any other signals which are present in Ulrick's system. Thus, Ulrick fails to disclose another of the limitations recited in claim 1.

Claim 14 recites a method which includes limitations similar to those of claim 1. The Examiner rejects claim 14, citing the same portions of Ulrick in regard to claim 14 as were cited in regard to claim 1. The applicant therefore reasserts the arguments set forth above with respect to claim 14. Because, as explained above, Ulrick fails to disclose sensing conditions of the output stage (as opposed to the power supply) and providing a programmable response (as opposed to simply turning off the amplifier) based on the sensed conditions, Ulrick fails to anticipate claim 14.

Because dependent claims 2-13 and 15-24 depend from and include all the limitations of either claim 1 or claim 14, claims 2-13 and 15-24 are patentably distinguished from Ulrick for the

same reasons set forth above in regard to claims 1 and 14. Additionally, claims 2-13 and 15-24 include further limitations that distinguish these claims from the Ulrick reference.

For example, claim 2 recites comparators that convert the analog sensor signals to binary sensor signals and provide these binary signals to corresponding low-pass filters. The Examiner states that Ulrick discloses comparators, citing the current comparator depicted at the upper right-hand side of figure 3. The Examiner further states that this current comparator receives an analog sensor signal and provides a generated binary sensor signal to a low pass filter, but fails to cite any portion of the Ulrick reference in support of this assertion. In fact, it is clear in figure 3 of Ulrick that this comparator receives a digital signal and provides its output to a counter, contrary to the limitations recited in claim 2. The only low-pass filter shown in figure 3 filters a LOAD RETURN signal prior to the signal being digitized and subsequently provided to the comparator. While the Examiner indicates that the counter and adder which receive signals from the current comparator disclose an accumulator serving as a low-pass filter, Ulrick discloses that these components are used to generate a triangle wave, rather than to low-pass filter a sensor signal (see figure 3, top, and col. 8, lines 38-45.)

Regarding claim 4, which recites the limitation of the controller detecting shoot-through current and responsively adjusting delays between high-side and low-side signals, the Examiner states that this is shown by Ulrick and cites "top of figure 3", "over current" and "delays driving drivers until system is ok". The applicant respectfully points out that shoot-through current is very different from "over-current", as disclosed by Ulrick. In the Ulrick patent, "over-current" refers to excessive current in the load (col. 7, lines 24-53.) Shoot-through current, on the other hand, is current which flows through the FETs of the output stage when they are simultaneously switched on (paragraphs 0028, 0038.) The only teaching in Ulrick regarding shoot-through current is that the circuit must be designed so that "in a worst cas[e] scenario, both MOSFETs will be briefly non-conducting rather than conducting" (col. 3, lines 10-12.) Thus, Ulrick simply requires that there be no shoot-through current rather than detecting it and adjusting the operation of the amplifier. Even if the teaching of Ulrick could be interpreted to disclose the potential for shoot-through current, the reference certainly does not teach the specific limitation of adjusting high-side and low-side signals to reduce the shoot-through current. The applicant notes that the "delays driving drivers until the system is ok" referred to by the Examiner is Ulrick's teaching that the amplifier should be shut down until the over-current condition no longer exists (col. 8, lines 55-59.) This clearly would not be interpreted by a person of ordinary skill in the art at the invention as adjusting delays between high-side and low-side signals. Thus, Ulrick fails to disclose the limitations of claim 4.

Regarding claim 5, which recites each comparator providing a binary signal to the corresponding low-pass filter, the Examiner states that this is shown by figure 3. The Examiner refers to the digitized sensor signals ("before AND gates") and asserts that these signals are provided to low-pass filters. As explained above, the counters and adders referred to by the Examiner are used to modulate a triangle wave rather than to low-pass filter a sensor signal. Further, the Examiner's interpretation is contrary to the disclosure of Ulrick, which states that one of the inputs to the comparator is "low-passed" (col. 8, lines 41-43.) While Ulrick teaches that variables such as rail voltages and temperatures are low pass filtered, it clearly states that "All of the other signals, output voltage and current, rail voltages and temperature are in analog form" (col. 8, lines 20-22.) Thus, Ulrick clearly does not teach that a comparator generates a binary signal from a sensor signal and that this resulting binary signal is low-pass filtered as recited in the claim.

Regarding claim 8, the Examiner states that Ulrick discloses that the low-pass filters comprise accumulators, citing "figure 3, adders". The only accumulator disclosed by Ulrick is accumulator 102, which is used to generate a triangle wave for modulator 100 (.). The applicant respectfully submits that the adder referred to by the Examiner is not an accumulator, as evidenced by the fact that Ulrick itself distinguishes between adders and accumulators and describes their different functions (col.3, lines 47-59, col. 5, lines 1-8.) The Examiner's interpretation of one of Ulrick's adders as an accumulator is therefore believed to be unreasonable, as a person of ordinary skill in the art of the invention, interpreting the term "accumulator" in light of the specification (see M.P.E.P. 2111) would not interpret Ulrick's adders to be "accumulators".

Regarding claim 13, the Examiner states that Ulrick discloses that the programmable response is selected from the group consisting of shutting down the output stage and compressing a portion of the audio signals (citing col. 8, line 59.) The applicant has amended claim 13 to remove the reference to shutting down the output stage, so the claim now recites that the programmable response is selected from a group of responses consisting of at least compressing a portion of the audio signals. While the applicant admits that Ulrick does disclose shutting down the amplifier in response to certain signals, it clearly does not disclose compressing the audio signals as one of a group of programmable responses. Ulrick therefore fails to disclose all the limitations of claim 13.

Regarding claim 16, the Examiner states that Ulrick discloses detecting a shoot-through condition in the output stage (citing "over current, top of figure 3".) As explained above in connection with claim 4, shoot-through current conditions in the output stage and over current

conditions at the output (i.e. at the speaker) as disclosed by Ulrick are not the same. In fact, because a shoot-through condition occurs when both switches of the output stage are conducting, the output of the output stage will float somewhere between the rail voltages – most likely approximately half-way between the rail voltages, in which case the shoot-through condition would not result in an over current condition at the output. Ulrick therefore fails to disclose all the limitations of claim 16.

Regarding claim 17, the Examiner states that Ulrick discloses adjusting relative delays between a high-side signal and a low-side signal input to the output stage to minimize shoot-through (citing “delays driving drivers until system is ok”). In fact, Ulrick discloses nothing whatsoever regarding the adjustment of relative delays between the high-side signal and the low-side signal – Ulrick only discloses that both signals are shut off until an over current condition no longer exists. Even if shutting off the signals could be considered delaying them, there would still be no relative delay – both signals are delayed by the same amount (the period during which the system is shut off.) The delay therefore could not affect shoot-through. Ulrick therefore fails to disclose all the limitations of claim 17.

Regarding claims 18 and 19, the Examiner states that Ulrick discloses detecting temperatures of output stage transistors and output stage heat sinks (citing “bottom of figure 3”). In fact, Ulrick discloses that over temperature conditions are detected in the power supply (col. 8, lines 55-59) rather than in the output stage transistors or output stage heat sinks. Ulrick therefore fails to disclose all the limitations of claims 18 and 19.

Regarding claims 20 and 21, see the arguments set forth above in regard to claim 2.

For at least the foregoing reasons, the Applicant respectfully submits that Ulrick fails to disclose all the limitations of the claims, arranged as required by the claims, and in as much detail as is contained in the claims. The rejection of the claims as being anticipated by Ulrick therefore fails to meet the criteria of M.P.E.P. 2131. The Applicant therefore respectfully requests that the Examiner withdraw the rejection.

Articulation of rejection

The Applicant respectfully points out that the goal of examination is to clearly articulate any rejection so that the Applicant has the opportunity to provide evidence of patentability and otherwise reply completely (M.P.E.P. 706). The particular part of the prior art references relied on in the rejections must be designated as nearly as practicable, and the pertinence of each reference, if not apparent, must be clearly explained (M.P.E.P. 706, citing 37 CFR 1.104).

The Applicant respectfully submits that the Examiner's citations to such things as "amplifier control", "figure 3", etc. fail to clearly point out the particular parts of the references relied upon in rejecting each claim. Furthermore, the Examiner has provided no explanation of the pertinence of the citations to the limitations of the claims. Such explanation is particularly important in cases such as this, where the relevance of the citations is not apparent.

Because the Examiner has failed to clearly articulate the rejections (i.e., identify the particular parts of the prior art references upon which the rejections are based and explain the relevance of these parts of the references). The Applicant respectfully submits that the Examiner has failed to comply with M.P.E.P. 706. To the extent that the rejections have not been clearly articulated, the Applicant does not have sufficient information to respond more completely to the rejections than as set forth above.

Considering the claims as a whole

The Applicant also points out that the claim as a whole must be considered – the Examiner cannot dissect the claimed invention into discrete elements (e.g., a matrix switch) and then evaluate the elements in isolation (M.P.E.P. 2106.) For example, the mere fact that Ulrick discloses an accumulator does not disclose the use of an accumulator to low-pass filter sensor signals as recited in the claims. The Applicant respectfully submits that such analysis is contrary to both USPTO procedures (M.P.E.P. 2106) and established case law (e.g., *Diamond v. Diehr*, 450 U.S. 175, 188-89, 209 USPQ 1, 9 (1981).)

Conclusion

The Applicant has now made an earnest attempt to place this case in condition for allowance. Other than as explicitly set forth above, this reply does not include an acquiescence to statements, assertions, assumptions, conclusions, or any combination thereof in the Office Action.

For at least the foregoing reasons, the Applicant respectfully requests allowance of all claims pending in the application. The Examiner is invited to telephone the undersigned at the number listed below for prompt action in the event any issues remain.

The Applicant hereby petitions for a one-month extension of time for the filing of this response. The appropriate fee is submitted herewith. If any additional extensions of time are necessary to prevent the above referenced application from becoming abandoned, the Applicant hereby petitions for such extensions. If any fees are inadvertently omitted, or if any

additional fees are required, or if any amounts have been overpaid, please appropriately charge or credit those fees to Deposit Account No. 50-3085 of the Law Offices of Mark L. Berrier.

Respectfully submitted



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